

Claims

1. A process for producing nitrosonium ions by oxidising a nitroxyl compound with an oxidising agent, *characterised* in that the nitroxyl compound is oxidised in the presence of an enzyme capable of oxidation and/or in the presence of a metal complex.
2. A process according to Claim 1, wherein the nitroxyl compound is a di-tert-nitroxyl compound, especially 2,2,6,6-tetramethylpiperidin-1-oxyl (TEMPO).
3. A process according to Claim 1 or 2, wherein the enzyme capable of oxidation is an oxidoreductase.
4. A process according to Claim 3, wherein the enzyme is a peroxidase, especially horse radish, soy-bean, lignin peroxidase or myelo- or lacto-peroxidase, and the oxidising agent is hydrogen peroxide.
5. A process according to Claim 3, wherein the enzyme is a polyphenol oxidase or a laccase and the oxidising agent is oxygen.
6. A process according to Claim 1 or 2, wherein the enzyme is a hydrolase, especially phytase or lipase, in the presence of a metal compound.
7. A process for oxidising a primary alcohol with a nitrosonium ion as a catalyst, *characterised* in that the nitrosonium ion is produced by the process according to any one of Claims 1-6.
8. A process according to Claim 7, wherein the primary alcohol is comprised in a carbohydrate, especially an α -glucan or fructan or a derivative thereof.
9. A process according to Claim 8, wherein a carbonyl-containing carbohydrate containing at least 1 cyclic monosaccharide chain group carrying a carbaldehyde group per 25 monosaccharide units and per average molecule is produced.
10. A process according to Claim 8 or 9, wherein the carbohydrate is a hydroxy-alkylated carbohydrate or a glycoside or a glyconic acid.
11. A process according to any one of Claims 1-7, wherein the primary alcohol is comprised in a steroid compound.

12. A process for treating textile fibres to introduce aldehyde groups, *characterised* in that the cotton fibres are treated with nitrosonium ion produced by the process according to any one of Claims 1-6.
13. An oxidised carbohydrate, the carbohydrate being selected from disaccharides, oligosaccharides and polysaccharides of the glucan, mannan, galactan, fructan, and chitin types and carbohydrate glycosides, containing at least 1 cyclic monosaccharide chain group carrying a carbaldehyde group per 25 monosaccharide units and per average molecule, or a chemical derivative thereof.
14. An oxidised carbohydrate according to Claim 13, containing at least 5 monosaccharide units per average molecule.
15. An oxidised carbohydrate according to Claim 13 or 14, which contains 1 to 50 cyclic monosaccharide chain group carrying a carbaldehyde group per 50 monosaccharide units and per average molecule.
16. A carbohydrate derivative according to any one of Claims 13-15, in which derivative at least a part of the carbaldehyde groups has been converted to a group with the formula $-\text{CH}=\text{N}-\text{R}$ or $-\text{CH}_2-\text{NHR}$, wherein R is hydrogen, hydroxyl, amino, or a group R^1 , OR^1 or NHR^1 , in which R^1 is C_1 - C_{20} alkyl, C_1 - C_{20} acyl, a carbohydrate residue, or group coupled with or capable of coupling with a carbohydrate residue.
17. A carbohydrate derivative according to any one of Claims 13-15, in which derivative at least a part of the carbaldehyde groups has been converted to a group with the formula $-\text{CH}(\text{OR}^3)-\text{O}-\text{CH}_2-\text{COOR}^2$ or $-\text{CH}(-\text{O}-\text{CH}_2-\text{COOR}^2)_2$, in which R^2 is hydrogen, a metal cation or an optionally substituted ammonium group, and R^3 is hydrogen or a direct bond to the oxygen atom of a dehydrogenated hydroxyl group of the carbohydrate.
18. A carbohydrate according to any one of Claims 13-17, further containing carboxyl and/or carboxymethyl groups.

ALLA